Minutes of spin meeting 01/30/08

Haixin presented the status of the AGS polarized proton setup status. The vertical sine 9th harmonic scan around 36+ν showed a different structure from two years ago in run6: the polarization dip is still at about -7mm, but the dip is not as deep as before and the shape is also shallower. Since imperfection resonance is independent of emittance, the possible candidates of the difference are:

1. We may not run the harmonic bump the same way as two years ago, such as the quoted bump amplitude is not actually at $G\gamma = 45$. To solve this problem, we first need to do a timing scan of the sin9v harmonic bump to determine the the timing of $G\gamma = 45$. Then we can scan the bump amplitude at the right timing.

2. Thomas commented that adding twelve polarized proton quads may change the phase advance, which could change the sensitivity of polarization vs. sine and cosine harmonics, but not their overall strength. A DEPOL calculation of the strength for the lattice with these new quads will be good. If indeed the shape changed, it could imply that there are some polarization gain can be get from cos9v scan.

3. Maybe the resonance crossing speed is different now. Leif commented that he already have plotted the $G\gamma$ vs time for the later part the ramp. Although the absolute value is not accurate yet, the crossing speed can be determined and compare with two years ago.

For the tunes on the ramp, apparently the tunes around 0+ν is still low. The vertical tune goes down before ramping up after injection. This is by design to cope with the large beta functions. Thomas suggested to try raise the vertical tunes there. Nick is going to do MAD calculation.

Haixin